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- (75) Inventors/Applicants (for US only): JONES, Peter [GB/GB]; 84 Fowimere Road, Heydon, Hertfordshire SG8 8PU (GB). TRACEY, Mark [GB/GB]; 5 The Old School, Mount Pleasant, Little Amwell, Hertfordshire SG13 7QX (GB). SUTTON, Nicola [GB/GB]; 55 Barley Rise, Baldock, Hertfordshire SG7 6RT (GB). BUTT, Neil [GB/GB]; 15 Perworth Street, Cambridge, Cambridgeshire CB1 2LY (GB).
- (54) Title: FLUIDIC DEVICES
- (57) Abstract: Apparatus for performing a chemical and/or biological process comprising: a first layer of material comprising fluid passages that define a microfluidic structure; and a second layer of material comprising fluid passages that define a larger-scale fluidic structure; the layers being bonded such that the fluid passages of the first layer communicate with those of the second layer to define a fluidic device.
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/GB 00/01257

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01N33/50 B01L3/00 G01N27/447

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 382 207 A (FUJI PHOTO FILM CO LTD) 16 August 1990 (1990-08-16) page 3, line 17-22 page 3, line 39-47 page 4, line 1-16 examples 1,2 --- -/-	1,4-6, 12,30-33

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document relating to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

20 December 2000

Date of mailing of the international search report

22.02.01

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/GB 00/01257

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WOOLLEY ADAM T ET AL: "Ultra-high-speed DNA fragment separations using microfabricated capillary array electrophoresis chips." PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES, vol. 91, no. 24, 1994, pages 11348-11352, XP002155992 1994 ISSN: 0027-8424 page 11348, right-hand column, paragraph 3 -page 11349, right-hand column, paragraph 1 ---	1-4,8, 10,11,31
X	WO 98 22811 A (BOUSSE LUC J ;CALIPER TECHN CORP (US); KOPF SILL ANNE R (US); PARC) 28 May 1998 (1998-05-28) page 6, line 20-28 page 7, line 3-9 page 7, line 15-19 page 8, line 20 -page 9, line 8 page 9, line 18-20 ---	1-4,9
X	WO 96 14933 A (UNIV PENNSYLVANIA) 23 May 1996 (1996-05-23) ---	1-5, 9-11,18, 31,32 6,30
Y	page 16, line 12-37 page 17, line 32 -page 18, line 23 page 19, line 15-29 page 20, line 20 -page 21, line 15 page 21, line 27-35 page 22, line 22-37; figures 1-15 ---	
X	WO 96 15576 A (SARNOFF DAVID RES CENTER) 23 May 1996 (1996-05-23) ---	1-3,8, 10,11, 18,19, 22,24,32
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Y	US 5 304 487 A (WILDING PETER ET AL) 19 April 1994 (1994-04-19) column 8, line 20 -column 9, line 4; figure 5 -----	6,30

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 00/01257**Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-33

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1 - 33

Apparatus for performing chemical/biological processes which is characterized by a microfluidic structure defined in a first material layer and a larger-scale fluidic structure defined in a second material layer; method for performing chemical/biological processes by using the said apparatus.

2. Claims: 34 - 55

Apparatus for performing chemical/biological processes comprising an analysis unit, a fluid control unit and an isolation means; method for performing chemical/biological processes by using the said apparatus.

3. Claims: 56 - 65

Method for forming a microfluidic device.

4. Claims: 66 - 78

Cell trapping structure characterized by a particular spatial arrangement of fluid passages; method for trapping cells using the said cell trapping structure.

5. Claims: 79 - 83

Apparatus for performing chemical/biological processes defined by a fluid inlet, a microfluidic structure linked to the inlet and a waste chamber; method for performing chemical/biological processes by using the said apparatus.

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